IN THE CLAIMS

1. (Previously Presented) Wireless temperature sensor for sensing the temperature of a matter that is at least partly of water, including food, comprising:

a temperature transducer of said matter;

an electromagnetic wave transmitter circuit electrically connected to the temperature transducer, comprising a converter of electric signals coming from the transducer to electromagnetic type signals;

a hermetic and thermal conductive case designed to be fitted with the electric system comprising the temperature transducer and the transmitter circuit;

wherein the sensor is laid out so that the temperature transducer is located near to the transmitter circuit, thereby forming a compact unit to be completely inserted into said matter so that it can be only subjected to the heat present inside the matter; wherein the sensor further comprises an autonomous non-saline and non-alkaline electric cell, placed inside the case, for supplying electric power to the whole sensor.

2. (cancelled)

3. (Previously Presented) Sensor according to claim 1, wherein the electric cell is near to the transducer and the transmitter circuit, thereby forming a compact unit.

4. (Previously Presented) Sensor according to claim 3, wherein the electric cell is distant from the transmitter and the transducer so that it remains outside the matter when the sensor is inserted into the matter.

5. (Previously Presented) Sensor according to claim 4, wherein the electric cell is protected against heat by a thermal insulating cover, thus forming a thermal shield.

6. (Previously Presented) Sensor according to claim 5, wherein the cover is of silicone.

7. (Currently Amended) Sensor according to ~~claims 1 or 3-6~~ claim 1, claim 3, claim 4, claim 5 or claim 6, wherein said autonomous electric cell can operate up to temperatures of about 130°C (266°F).

8. (Currently Amended) Sensor according to ~~claims 1 or 3-6~~ claim 1, claim 3, claim 4, claim 5 or claim 6, wherein the autonomous electric cell can operate from temperatures of about -40°C.

9. (cancelled)

10. (Currently Amended) Sensor according to ~~claim 1 or 3 to 6~~ claim 1, claim 3, claim 4, claim 5 or claim 6, wherein said autonomous electric cell is a thionyl lithium electric cell.

11. (Currently Amended) Sensor according to ~~claim 1 or 3-6~~ claim 1, claim 3, claim 4, claim 5 or claim 6, wherein the case is electrically conductive, and wherein the sensor further comprises means for switching-off electric power supplied by the power supply source when the sensor is not in contact with said matter, the power supply switch-off means being sensitive to the conductivity of said matter.

12. (Currently Amended) Sensor according to ~~claim 1 or 3-6~~ claim 1, claim 3, claim 4, claim 5 or claim 6, wherein the transmitter circuit transmits the electromagnetic waves by bursts.

13. (Currently Amended) Sensor according to ~~one claim 1 or 3-6,~~ claim 1, claim 3, claim 4, claim 5 or claim 6, wherein the hermetic case is of a single piece.

14. (Currently Amended) Sensor according to ~~claim 1 or 3-6~~ claim 1, claim 3, claim 4, claim 5 or claim 6, wherein the case is made of several fitted pieces that can be disassembled.

15. (Previously Presented) Sensor according to claim 14, wherein assembly means for

assembling of two pieces of the hermetic case are metallic and create an electric contact for the operating of the sensor.

16. (Currently Amended) Sensor according to ~~claim 1 or 3 to 6~~ claim 1, claim 3, claim 4, claim 5 or claim 6, wherein the case is laid out so as to facilitate the insertion of the sensor into said matter.

17. (Currently Amended) Sensor according to ~~claim 1 or 3-6~~ claim 1, claim 3, claim 4, claim 5 or claim 6, wherein the sensor further comprises an electromagnetic wave transmitting aerial laid out so as to further constitute means of gripping.

18. (Previously Presented) Sensor according to claim 17, wherein the aerial has an electrical insulating cover.

19. (Previously Presented) Sensor according to claim 18, wherein the electrical insulating cover is a silicone foam.

20. (Previously Presented) Temperature monitoring device of a matter that is at least partly of water, including food, intended to be placed in an oven comprising:

a wireless temperature sensor comprising:

a temperature transducer of said matter;

an electromagnetic wave transmitter circuit electrically connected to the temperature transducer, comprising a converter of electric signals coming from the transducer to electromagnetic type signals;

a hermetic and thermal conductive case designed to be fitted with all of the electric system comprising the temperature transducer and the transmitter circuit;

wherein the sensor is laid out so that the temperature transducer is located near the transmitter circuit, thereby forming a compact unit to be completely inserted into said matter so that it can be only subjected to the heat present inside the matter; and

a control unit autonomous and independent from the oven behaviour, and controlling the thermal data transmitted from the sensor by electromagnetic waves, said control unit comprising:

a receiver for the type of electromagnetic waves transmitted by the sensor;

a micro-controller capable of controlling the thermal data in electromagnetic form received from the sensor by the receiver, and of transmitting at least a part of it to a user interface;

the user interface comprising transmission means of the thermal data in a form understandable to the user of the device.

21. (Previously Presented) Device according to claim 20, wherein the control unit further comprises a memory capable of storing thermal data and wherein the micro-controller is capable of processing the thermal data received from the sensor in accordance with this thermal data.

22. (Previously Presented) Device according to claim 21, wherein the user interface comprises an alarm, wherein thermal data stored in the memory corresponds to a temperature threshold, and in that the micro-controller triggers the alarm if the temperature detected by the sensor is greater than the temperature threshold.

23. (Previously Presented) Device according to claim 21 or claim 22, wherein the user interface comprises means that allow the user to input the data into the memory.

24. (Currently Amended) Device according to claim 20, claim 21 or claim 22 ~~to 22~~, wherein the user interface comprises an alarm, and wherein the micro-controller triggers the alarm if it does not receive any electromagnetic waves over a pre-set duration or if it does not receive at least one thermal informations that it should have received.

25. (Currently Amended) Temperature monitoring process for a matter that is at least partly of water, including food, the matter having a temperature less than approximately 130°C (266°F), activating the temperature monitoring device according to claim 20, claim 21 or claim 22 ~~claims 20 to 22~~, wherein the wireless part of the temperature sensor comprising the transducer and the transmitter circuit is inserted into said matter.

26. (Previously Presented) Temperature monitoring process according to claim 25, wherein the part of the sensor comprising the power supply is also inserted into said matter.